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Oral presentation

Investigation of K-CN gene polymorphisms on milk productivity by using PCR-RFLP method in Anadolu water buffalo breed

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Abstract

Water buffalo breeding by breeder project is ongoing in Sivas province as well as in many other provinces of Turkey Republic. The aim of this study was to investigate gene polymorphisms on Exon 4 – Intron 5 and only Exon 4 of kappa casein (K-CN) gene for milk productivity in Sivas province. Blood samples were taken from a total of 135 water buffaloes and DNA extractions from taken bloods were conducted by phenol-chloroform method. DNA samples were amplified by using K-CN gene specific primers in Polymerase Chain Reaction (PCR). Amplified PCR products were separated in 2% agarose gel electrophoresis. Amplified PCR products were digested by Hae III – Hind III – Hinf I for Exon 4 – Intron 5 and Hind III for Exon 4 restriction endonuclease enzymes in accordance to their respective protocols for to determine gene polymorphisms. Digested PCR products were then separated in 3% agarose gel electrophoresis in order to determine allelic polymorphisms. As a result, only BB genotype (Hinf I enzyme) was obtained, but E allele (Hae III) was not obtained for K-CN gene. For Hind III enzyme, only BB genotype was obtained from Exon 4 of K-CN gene, while both AB (27.41%) and BB (72.59%) genotypes were determined from Exon 4 - Intron 5 of K-CN gene. No gene polymorphism was detected from used restriction enzymes in Anatolian water buffaloes ($P>0.05$). In conclusion, it can be said that Anatolian water buffaloes have higher milk yield with high milk fat due to presence of BB genotype. This research was supported by the Scientific Research Project Fund of Sivas Cumhuriyet University under project number V-019. Ethics approval of the study was granted from the Local Ethics Committee for Animal Experiments of Cumhuriyet University in 19.06.2014 with issue number of 65202830/122.

Keywords: Water Buffalo, Kappa casein, PCR-RFLP.

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